PUBLIC HEALTH REPORTS.

VOL. XXV. APRIL 29, 1910. No. 17.

THE SANITARY PRIVY. [a]

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Soil pollution.—It is common knowledge among farmers that if live stock is kept year after year in the same pasture the animals will not thrive; in fact, that sooner or later, especially during a warm, moist season, they will probably sicken and die; this is especially true as applied to young animals.

The scientific explanation of this fact is clear. Nearly all animals harbor parasites in their intestinal canal; their eggs are passed in the droppings and develop young worms which in turn reinfect the live stock. If a pasture is in constant use, the ground becomes heavily infested with the young worms and other germs; the smaller the pasture and the greater the number of animals kept in it, the more intensified is the soil pollution. A warm, moist season is especially favorable to the development of parasitic worms, hence during such seasons the infection of the stock is more severe. The more heavily the animals are infected with parasites, the greater is the strain upon the strength of the stock and the less they thrive; when the infection reaches a point at which the pastured animals suffer, they naturally become sick. In other words, the soil pollution of a field by live stock renders the pasture unfavorable for raising animals, and the farmer learns by experience that it is necessary to move his cattle and sheep to other ground in order "to give the old pasture a rest," or expressed more technically, in order to permit the young worms and other germs in the pasture to die.

The foregoing principles, so well known to farmers in respect to their horses, cattle, swine, sheep, and chickens, apply with equal force to their families, but, strange to say, farmers are not so familiar with these principles as applied to their children as they are as applied to their live stock.

The prevention of soil pollution.—The *privy* is an invention of man which enables him to use the same yard (namely, pasture) for his family, year after year, and by which he is able to protect his family from the evils of soil pollution. Human beings, as well as cattle,

[a] It is intended to reprint this article with detailed plans of construction arranged in a simple manner so that even a schoolboy can, by following the plans, build a sanitary privy.

sheep, horses, and chickens, may have germs, worms, and other parasites; if people pollute the soil, they too scatter germs and eggs of parasites on the ground; these eggs develop young worms, which in turn reinfect the family; the more intense this reinfection becomes, the less the children thrive, and finally a point is reached when the children or other members of the family sicken and die as a result of this infection.

If, however, a proper sanitary privy is provided, and if this is used consistently by all persons on the premises, it is clear that all the germs and infectious material (as typhoid bacilli) and all the eggs of the parasites are deposited in one place, from which they can be removed, so that the danger of reinfection is avoided.

Diseases spread by soil pollution.—It is especially the diseases of the intestinal and urinary systems that are spread by soil pollution, as for instance, typhoid fever, hookworm disease, eelworm infection, tapeworms, Cochin-China diarrhea, amebic dysentery, bacillary dysentery, etc. All of these diseases can be greatly reduced and almost entirely eradicated by preventing soil pollution.

The popular idea of the purpose of a privy.—To the popular mind, a privy (as indicated by its name) is a structure to which a person may retire in private when responding to the daily calls of nature. Modesty and privacy are the prime ideas in the lay mind which lead to the construction and use of a privy. In accordance with this widespread conception, the chief idea usually sought is to hide a person momentarily from view, and as a clump of bushes or a grove of trees secures such privacy, many persons avoid the privy and simply use some secluded private spot.

This popular conception of an outhouse is reflected not only in the standard, but also in some medical dictionaries. Thus, Webster's Dictionary defines a privy as "A necessary house or place; a backhouse." The National Medical Dictionary defines it as "An outhouse for convenience of defecation." Dunglison's Medical Dictionary does not even define the word.

The modern sanitary idea of the purposes of a privy.—To the sanitarian *the chief purpose of a privy is to prevent soil pollution, and thereby (by properly collecting the excreta) to prevent the spread of disease.* Modesty and privacy are, to the mind of the sanitarian, laudable objects, but infinitely secondary when compared with the great object of saving human life by preventing the spread of disease.

As substitute for the dictionary definition of a privy, I would suggest the following:

A privy is an outhouse designed, *primarily*, to prevent soil pollution and hence to prevent the spread of disease through dissemination of disease germs contained in the excreta; *secondarily*, to insure privacy and safeguard modesty to persons responding to the daily calls of nature.

The essential parts of a privy.—On basis of the definition just proposed, the privy should consist of two chief parts, namely: *First*, a receptacle for the excreta, in which they will be safeguarded against dissemination by any and all agents, as, for instance, rain, insects (as flies, etc.), chickens, swine, dogs, etc.; *secondly*, a retiring room for the people responding to nature's daily calls.

The essential problems in constructing a privy.—From the foregoing it is clear that the two great problems to be held in mind in construct-

ing a privy are, *first*, to protect the receptacle for the excreta in such a way that the germs can not spread; *secondly*, to construct the entire outhouse in such a way that persons will seek to use it and not (as is so common) to avoid it—in other words, not only must it insure privacy, but it *must not be a disagreeable place in which to be private.* This latter point is especially important in warm climates, for the ordinary privy is so disagreeable in warm weather that people, especially men, very frequently avoid it. Still another point must be considered, namely, the cost of construction must be brought within the purse limits of the poor as well as of the well-to-do family.

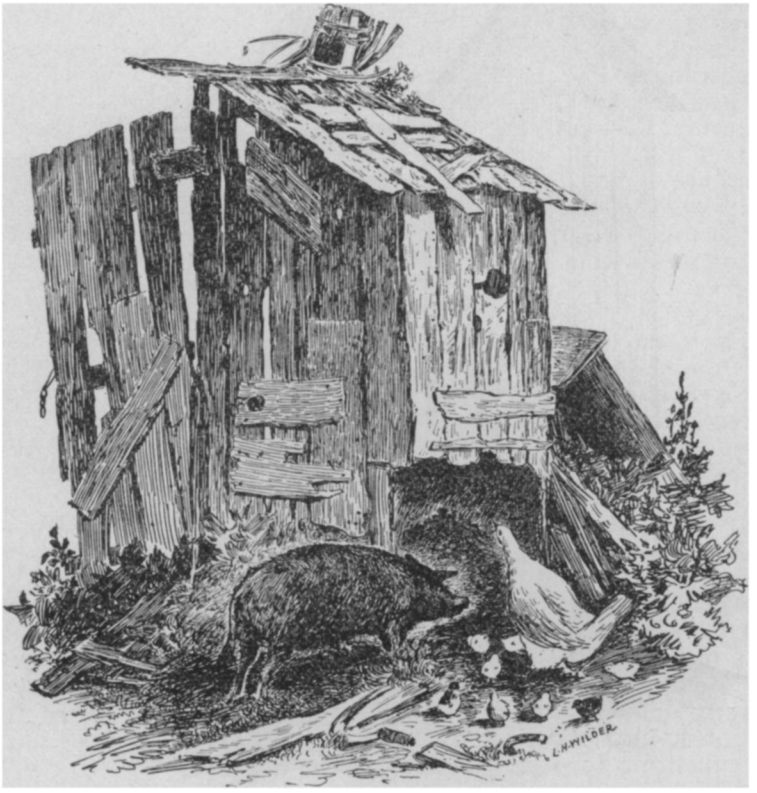

FIG. 1.—An insanitary privy, found too frequently on our farms. Notice how the animals are spreading soil pollution.

How not to build a privy.—Figure 1 represents the privy as it should *not* be constructed. This style of outhouse is altogether too common, not only on farms, but also in villages and in suburbs of cities.

Figure 2 represents an outhouse which is much less offensive to the eye and to the sense of modesty, but scarcely less dangerous from a health point of view than the outhouse shown in figure 1.

The fundamental fault of the structures shown in figures 1 and 2 is that both of these toilets are constructed solely on basis of the popular idea that a privy is simply a place for privacy, hence no provision exists for safeguarding against the spread of disease. It may

be admitted that if outhouses of the styles shown in figures 1 and 2 are cleaned regularly, say once a day or once a week, the danger of the spread of disease is decreased in proportion to the care exercised in promptly removing the excreta. But the point must be insisted upon that no matter how carefully and how frequently such toilets (figs. 1 and 2) are cleaned, *it is both theoretically and practically impossible to prevent disease from spreading.* For instance, flies may visit

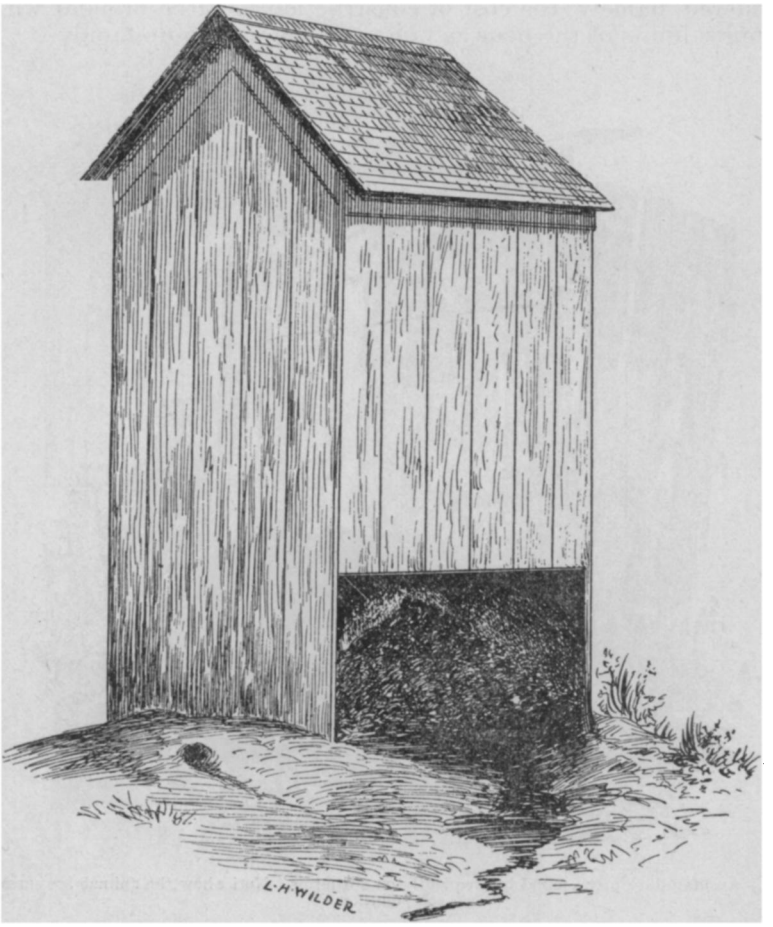

FIG. 2.—The average style of privy found in the South. It is known as a surface privy, open in back. Notice how the soil pollution is being spread, and how flies can carry the filth to the house and thus infect the food.

the excreta and carry infectious filth to the food, while dogs, swine, and chickens may feed here and scatter infectious material over the ground. One of the common sights in villages and on farms is that of chickens feeding at outhouses constructed on the plan shown in figures 1 and 2.

How to build a privy.—Figures 3 and 4 show a privy designed to comply with the revised definition given above. The following are the essential features: There is (A) a closed portion (box) under the

seat for the reception (in a receptacle) and safeguarding of the excreta; (B) a room for the occupant; and (C) there is proper ventilation.

A. The receptacle consists practically of a box, with a top represented by the *seat*, with a *floor* which is a continuation of the floor

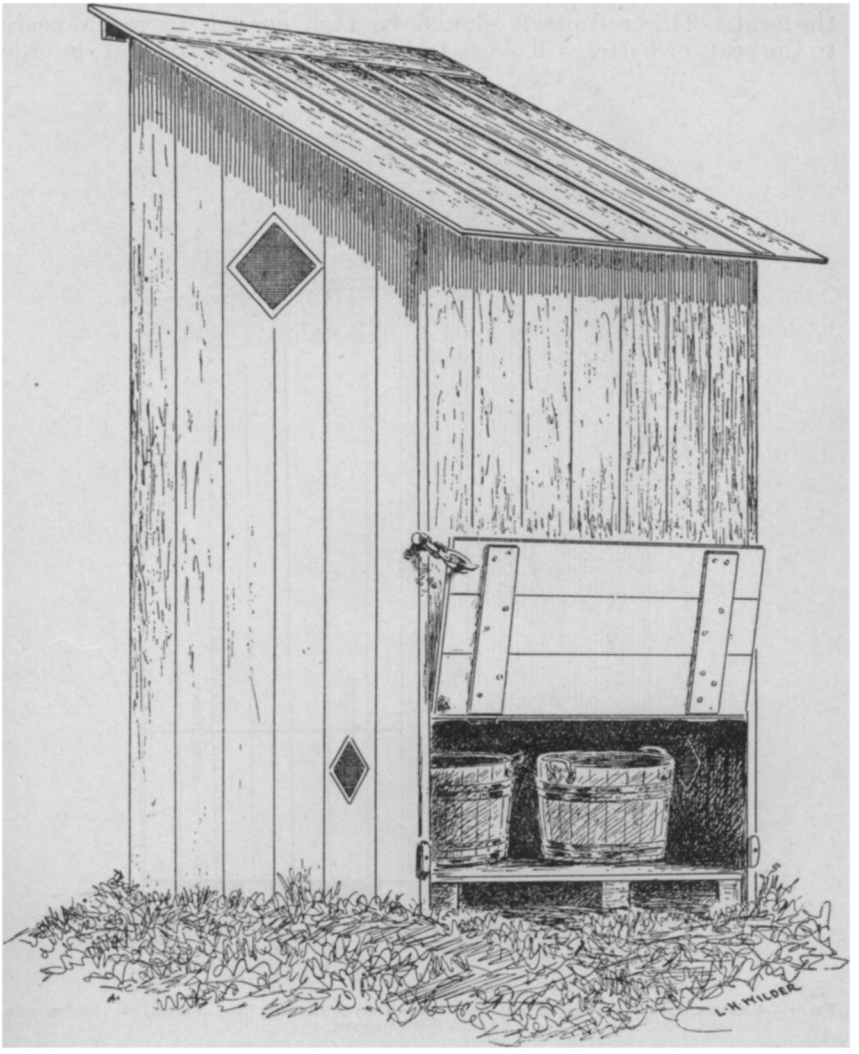

FIG. 3.—A sanitary privy, designed to prevent soil pollution. Galvanized pails may be used instead of tubs. The door should be kept closed. The ventilators should be wire-screened to keep out flies. The seats should be provided with hinged lids.

of the room, with a *front* extending from the seat to the floor, with a *hinged back* which should close tightly, and with two *sides* continuous with the sides of the room and provided with wire screened ventilators, the upper margin of which is just under the level of the seat. The seat should have one or more holes according to the size of the privy desired, and each hole should have a *hinged lid* which lifts up

toward the back of the room; there should be a piece of wood nailed across the back, on the inside of the room, so as to prevent the lids from being lifted sufficiently to fall backward and so as to make them fall forward of their own accord as soon as the person rises. In this box there should be one or more water-tight tubs, half barrels, pails, or galvanized cans, corresponding to the number of holes in the seat. This receptacle should be high enough to reach nearly to the seat, or better still, so as to fit snugly against the seat, in order

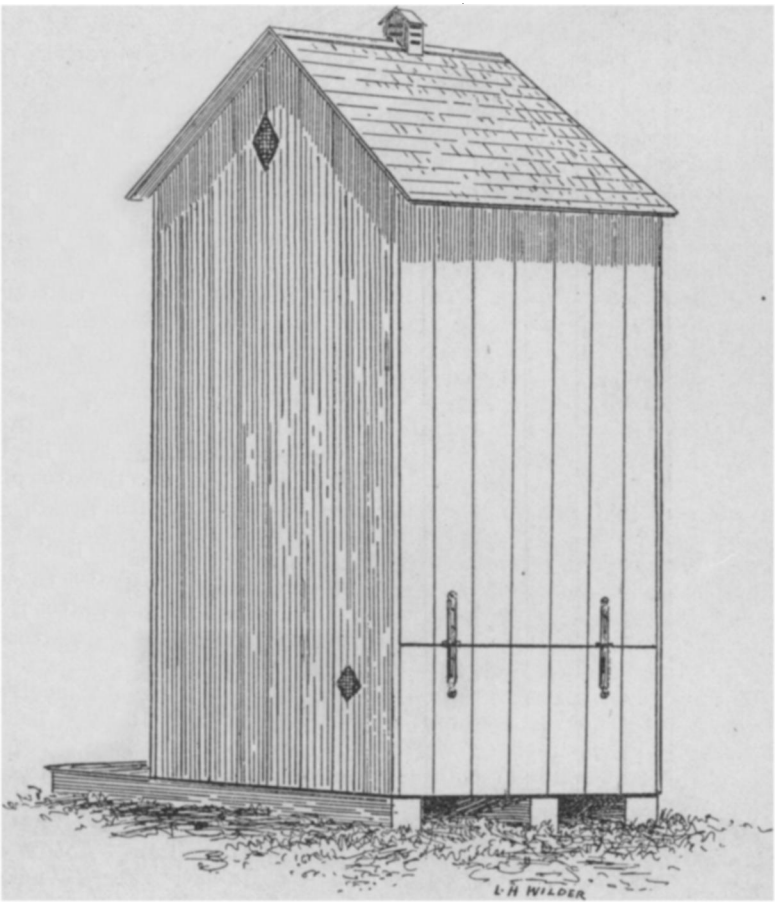

FIG. 4.—A sanitary privy showing firmly closed door, thus preventing flies, animals, etc., having access to the fecal material.

to protect the floor against soiling, and sufficiently deep to prevent splashing the person on the seat; it should be held in place by cleats nailed to the floor in such a way that the tub will always be properly centered. The back should be kept closed, as shown in figure 4.

B. The room should be water-tight and should be provided in front with a good, tightly fitting *door*. The darker this room can be made the fewer flies will enter. The *roof* may have a single slant, as shown in figure 3, or a double slant as shown in figure 4, but while

the double slant is somewhat more sightly, the single slant is less expensive on first cost. The room should be provided with two or three wire-screened ventilators, as near the roof as possible.

C. The ventilators are very important additions to the privy, as they permit a free circulation of air and thus not only reduce the odor but make the outhouse cooler. These ventilators should be copper-wire-screened in order to keep out flies and other insects. There should be at least 4 (better 5), arranged as follows: One each side of the box; one each side the room near the roof; and a fifth ventilator, over the door, in front, is advisable.

Latticework, flowers, and vines.—At best, the privy is not an attractive addition to the yard. It is possible, however, to reduce its unattractiveness by surrounding it with a latticework on which are trained vines or flowers. This plan, which adds but little to the expense, renders the building much less unsightly and much more private.

Disinfectant.—It is only in comparatively recent years that the privy has been thought worthy of scientific study, and not unnaturally there is some difference of opinion at present as to the best plan to follow in regard to disinfectants.

(*a*) *Top soil.*—Some persons prefer to keep a box or a barrel of top soil, sand, or ashes in the room and to recommend that each time the privy is used the excreta be covered with a shovelful of the dirt. While this has the advantage of simplicity, it has the disadvantage of favoring carelessness, as people so commonly (in fact, as a rule) fail to cover the excreta; further, in order to have the best results, it is necessary to cover the discharges very completely; finally, at best, our knowledge as to how long certain germs and spores will live under these conditions is very unsatisfactory.

(*b*) *Lime.*—Some persons prefer to have a box of lime in the room and to cover the excreta with this material. Against this system there is the objection that the lime is not used with sufficient frequency or liberality to keep insects away, as is shown by the fact that flies carry the lime to the house and deposit it on the food.

(*c*) *Water and oil.*—A very cheap and simple method is to fill the tub about one-fourth to one-third with water; this plan gives the excreta a chance to ferment and liquify so that the disease germs may be more easily destroyed. If this plan is followed a cup of oil (kerosene will answer) should be poured on the water in order to repel insects.

(*d*) *Cresole.*—Some persons favor the use of a 5 per cent crude carbolic acid in the tub, but probably the compound solution of cresole (U. S. P.) will be found equally or more satisfactory if used in a strength of 1 part of this solution to 19 parts of water.

If a disinfectant is used the family should be warned to keep the reserve supply in a place that is not accessible to the children, otherwise accidents may result.

Cleaning the receptacle.—The frequency of cleaning the receptacle depends upon (*a*) the size of the tub, (*b*) the number of persons using the privy, and (*c*) the weather. In general, it is best to clean it about once a week in winter and twice a week in summer.

An excellent plan is to have a double set of pails or tubs for each privy. Suppose the outhouse is to be cleaned every Saturday: Then

pail No. 1 is taken out (say January 1), covered, and set aside until the following Saturday; pail No. 2 is placed in the box for use; on January 8, pail No. 1 is emptied and put back in the box for use while pail No. 2 is taken out, covered, and set aside for a week (namely, until January 15); and so on throughout the year. The object of this plan is to give an extra long time for the germs to be killed by fermentation or by the action of the disinfectant before the pail is emptied.

Each time that the receptacle is emptied, it is best to sprinkle into it a layer of top soil about a quarter to half an inch deep before putting it back into the box.

Disposal of the excreta.—For the present, until certain very thorough investigations are made in regard to the length of time that the eggs of parasites and the spores of certain other germs may live under various plans (*a*) to (*d*), mentioned on page 551, it is undoubtedly best to burn all excreta; where this is not feasible, it is best to bury all human discharges at least 300 feet away and down hill from any water supply (as the well, spring, etc.).

Many farmers insist upon using the night soil as fertilizer. In warm climates this is attended with considerable danger, and if it is so utilized, it should never be used upon any field upon which vegetables are grown which are eaten uncooked; further, it should be promptly plowed under.

In our present lack of knowledge as to the length of time that various germs (as spores of the ameba which produce dysentery, various eggs, etc.) *may live, the use of night soil as a fertilizer is false economy which may result in loss of human life. This is especially true in warm climates.*